

# Science Versus Metaphysics\*

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I appear here as advocate in behalf of this person, man, to plead the case of Science *versus* Metaphysics. The issue involved is briefly this: for some time past metaphysics has claimed guardianship over him; but the assertions upon which metaphysics bases its claim to this prerogative are, I protest, not only wanting in substantiation but are for the most part false and misleading and therefore actually or potentially injurious to him. Consequently, I seek to have the metaphysician restrained from further interference in his affairs.

I will proceed by laying before you my credentials, then I will seek to establish what I contend to be man's basic natural right from which, I submit, issue all value considerations. I will establish that man has in the past, and continues to be, prevented from enjoying this natural right to his fullest advantage by these unsubstantiated propositions, for the persistent continuation of which the metaphysician is responsible. I will present evidence that when relieved of these unsubstantiated representations he can be sufficient unto himself, he can stand on his own feet. And lastly, I repeat, I will petition the court to take appropriate action to protect his person from further injuries such as he has suffered in the past.

By metaphysics I mean all unsupported speculation that transcends physically observable fact. Whatever guise he wears, I say to every metaphysician, every knower of the unknown, that he and I have only this in common: we both esteem truth as a value. Unhappily, however, we have different definitions of truth, and therein lies the reason for our disagreement.

As I see the matter, this difference in our definition of truth brings us into utterly incompatible and irreconcilable positions. There can be no middle ground between us, no compromise, and should that day come when in order to survive he and I might be brought into physical rather than dialectic combat, one should have to do the other to death, because we both believe (and here is another of our mutual values) that truth which is worth having is worth dying for. I suspect that that day which Cardinal Newman foresaw is not far off, 'when two real and living principles (Catholicism and rationalism) simple, entire and consistent, one in the Church, the other out of it, (will) at length rush upon one another, contending not for names and words or half-views, but for ele-

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mentary notions and distinctive moral characters.' I suspect that science and metaphysics, Cardinal Newman's kind or any other kind, cannot live together much longer in this world without such a conflict as may lead to social disintegration.

May I present my credentials. Whether, in the philosophical sense, you describe me as a naturalist or a materialist is a matter of indifference. I agree with both schools on so many basic points that, with few reservations, I can go along with either. With both, I accept that the inorganic pattern of matter existed prior to the evolution of conscious organisms, and that it continues and will continue to exist independently of their consciousness or mine. I accept as my definition of matter that which is given by the physicist and chemist. Thus I reject idealism in all its forms.

As my definition of living organisms I accept that which is given by the evolutionary biologist, and thus I reject vitalism in all its forms.

As my definition of mind and consciousness I accept that given by the physiologist, psychologist, and psychiatrist. Consciousness I see as an incidental manifestation of matter appearing late in organic evolution, shared qualitatively by all creatures which possess the requisite nervous system, and increasing in functional activity with increasing complexity of the nervous system.<sup>1</sup> Without an adequate, functional nervous system there can be no mind or consciousness, or any manifestation thereof. Thus I reject dualism in all its forms.

I also reject what I may designate as supernatural legalism in nature. There is no warrant for seeking moral laws unique to moral affairs, any more than there is for seeking laws unique to biological or chemical or physical affairs. Indeed, the word law does not belong in this discussion. Science has abandoned the concept of natural law, in the juridical sense of *arbiter dicta* superimposed by supernatural force on the natural universe. This is a misconception for which metaphysics is largely responsible. All levels of nature, from atoms and molecules up through the biological and mental levels, are rigidly cemented together, horizontally and vertically, by the irreducible fact of deterministic causality. Nature is given, and outstanding among its properties is internal consistency or reliability. Within this irreducible fact of consistency or reliability, law is merely a description of how one or another specified collocation of matter behaves under specified conditions, a behaviour which is determined by its organization and environment.

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<sup>1</sup> H. W. SMITH, ORGANISM AND ADAPTATION: DYNAMIC OPPOSITIONS IN ADAPTATION. (Ed. by John Romano) Cornell University Press, Ithaca, New York (1949).

With Francis Bacon,<sup>2</sup> "I hold that the universe is not to be narrowed down to the limits of the understanding . . . . but the understanding must be stretched and enlarged to take in the image of the universe as it is discovered." Beyond what is known of nature there remains an unknown (which I do not capitalize) about which I know not a scintilla, and which therefore I cannot and will not venture to discuss. I speak of the reliability of nature, but I cannot explain it. I haven't the faintest idea why the whole universe does not explode in a wholly unpredictable manner in the next ten seconds. This interesting question must be filed in the drawer labeled 'unknown' and left alone for the time being.

And I mean left well alone. I have been charged with philosophical aberrancy because I am not militantly atheistic, but I am not militantly atheistic for the good scientific reason that I refuse to discuss that about which I know nothing. I outrightly deny the existence of fairies, elves and sprites on the grounds that did they exist they—or evidence of their existence—would have been caught in the biologist's net. Here, as a scientist, I am on firm ground in my denial. But atheism is the confident assertion that no god or gods, however conceived, exist. No disciplined scientist would venture so confident a statement on the basis of no evidence. How can I deny the existence of supernatural beings when I cannot set my traps beyond the boundaries of nature? I must simply admit that I know nothing about the matter and refrain from talking about an evidential vacuum. I do not know anything about the ultimate origin or the ultimate end of the cosmos, or why it is internally so reliable, or why it has the atomic and molecular structure that it has, or a number of other things, and I am not philosophically abashed to confess these facts<sup>3</sup>. This position is not atheism, but agnosticism, as Huxley used the word.

So, while I will not talk about that which is unknown, I say to you, Mr. Purveyor of Metaphysical Speculation, that I will not credit your assertions until you bring in substantiating evidence to show that you know what you are talking about. You personally may believe what you will, but I strongly resist your forging out of your unsubstantiated beliefs any so-called values for my client, you shall not write a single term in his equation for living based upon your private dreams.

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<sup>2</sup> Bacon, *Parasceve* appended to *NOVUM ORGANUM* (Fowler ed. 1878 and 1889).

<sup>3</sup> It is not necessary for science to prove that it is All, and science has never asserted that it is All; on the contrary, every operation of science presupposes an unknown; science is all that we know with reasonable certainty, but science is also the never-ceasing exploration of the unknown. Science most emphatically is not All, but what lies beyond the frontiers of science, of the known, is unknown, and so it must be clearly labeled.

Now may I present my client: He is a bipedal primate, a mammal, a vertebrate, an animal, a living creature, a fleeting and corruptible organism composed of atoms and molecules. I challenge any man to present a scintilla of credible evidence that he is anything more.

The pattern of all organisms is dynamic, spun out of the interplay between the organism and its environment. Environment in part shapes it into what it is, environment sustains it, and, by continually disturbing it, environment frequently forces it in devious ways to become something else. Every organism is impelled by its atomic and molecular make-up to seek such relations with environment as will minimize its dissatisfactions. To put the matter positively, every living organism seeks to maximize its satisfactions. And so it is with man. Like countless millions of other creatures, he strives, by virtue of his organismal pattern, to maximize his satisfactions. Here is the biological basis for man's natural rights in terms of which all human values must be adjudicated.

This dynamic interplay between organism and environment is, relative to the organism, a mixture of good and evil. Against hunger, thirst, cold, heat, danger and fatigue, there stand food, water, warmth, shade, safety and sleep; against the drives of procreation there stand the companionship and love of a mate; against the loneliness and helplessness of isolation there stand fellowship, confidence, loyalty, the co-operative powers of the clan, the tribe, the state; against social chaos there stand social stability fostered by tradition, morality, law and political union; against monotony there stands recreation; against emotional need there stand imagination, music, literature and art; against the unknown itself there stand curiosity and active exploration and self-confidence; against the errors of preconception and misinterpretation there stands disciplined doubt. These antitheses all involve value relations. A value is any relation which actually or potentially promotes satisfaction. These values are simultaneously subjective and objective; the organism is one necessary part and in this sense a value is subjective, while some aspect of environment is the other necessary part, and in this sense the value is objective.<sup>4</sup> All these values are relative and differ with the individual, with his history, his immediate subjective and objective circumstances, with his imaginative vision of potential future circumstances. Because men of common cultural heritage are similar in many respects, even those satisfactions which are of a highly elective type, moral, social, political values, may be shared by large numbers of men, but it is fallacious to de-

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<sup>4</sup> This definition closely follows that of REID, *THE NATURE AND STATUS OF VALUES IN PHILOSOPHY FOR THE FUTURE. THE QUEST OF MODERN MATERIALISM*. The Macmillan Company, New York (1949). It also issues from the philosophical position expressed in the writer's *KAMONGO*, Viking Press, New York (1949).

scribe such values as absolute. It is fallacious to suppose that there are absolute values because we do not know and have no way of discovering if such absolutes exist, and the statement is therefore a statement about nothing at all.

I will rest my case on the assertion that all values have a naturalistic basis, and I find this basis in the biological fact that every living organism operates to increase its satisfactions. I claim that freedom to do this without let or hindrance is the natural right of man, his by inheritance from two thousand million years of evolution.

And I charge you, Mr. Metaphysician, with injuring my client in the exercise of this natural right. In the first instance, you talk about the 'religious impulse' as though it were some supernal *vis a tergo* endeavoring to express itself against an antithetical impediment intrinsic to time, space and matter. What is religion in the abstract but an emotional response to life, to the cosmos, to the unknown? I submit the easily demonstrated fact that emotional excitation represents neural activity in that part of the brain stem known as the hypothalamus, an ancient part of the brain which is developed to varying degrees in the fishes, Amphibia, reptiles, birds and mammals. All these animals emote to some degree under provocation, the emotion in the state of nature generally having biological survival value. In man the interconnections between the cerebral cortex and the ancient hypothalamus remain such that in the undisciplined state almost any object may cause him to emote in fear, wonder, delight, anger, awe, this emotion being perceived as though it were intrinsic to the object, until experience teaches him that the object is one thing, his emotional response another. I assert that the religious impulse in its pure form is essentially emotional and has no more significance than any other molecular vibration of the hypothalamus and associated titillation of the sensorium, as observable in the fishes, Amphibia, reptiles, birds, and mammals generally.

I charge that you attempt to seduce my client, by means of candles, robes, incense, music, art, and story-telling, and by other emotional alarms and excitations which titillate the hypothalamus, into the acceptance of your specious propositions. I ask this court to enjoin you from using human emotions to gain your ends, from claiming for any human emotion or mixture thereof any transcendent significance unless and until you adduce proof thereof. I submit that such proof is not available, and that in its absence my client is wronged by this deception in that he is led into erroneous views of himself, of the nature of his cosmos, and of his place in that cosmos.

On this point, man's place in nature, I charge you with speci-

fically encouraging my client in the unwarranted conceit that his position is unique. It was my materialistic science and not your speculative astrology that taught man to be humble, that revealed to him that his earth is but a minor planet circling an insignificant star among 100,000,000,000 stars which comprise the galaxy of the Milky Way. The diameter of this galaxy is of the order of 100,000 light years, the diameter of the earth's orbit about the sun but 1000 light seconds, a discrepancy so great that the mind cannot grasp it except as a mathematical computation. And yet the total space revealed with the 100-inch reflector on Mount Wilson is estimated to hold approximately 100,000,000 galaxies like ours, the most distant 1,000,000,000<sup>5</sup> light years away. There is revelation for you! — but it does not enhance man's glory.

According to the highly reliable evidence of its radioactive rocks, the earth upon which he lives is 3,200,000,000 years old, but man has been an inhabitant of it for less than one three-thousandth of this time. He is but a comeling in this scheme of things. He has, however, been here long enough to learn that he is only one of nearly a million known species of animals that have appeared, flourished and in many cases disappeared during the 1,000,000,000 years that life has existed on this planet, that he is neither more nor less important biologically than any one of them, that life itself is but an incidental physical-chemical phenomenon. Like all other species of living things, he has come into being by natural evolution. His mind, like his body, has a natural history and is brought into existence by natural forces and, like his body, it is corruptible. The best that can be said for this vaunted mind of his is that it has biological survival value, when he uses it.

You assert that you eschew pre-philosophical certitudes in your philosophy, and then you immediately encourage my client in the unsubstantiated belief that he is somehow favored in this scheme of things, that something extra-special is in store for him, something that countless billions of other animals who have lived and suffered and died will not enjoy. Is this not pre-philosophical in the extreme? You assert that you are against easy ways to comfortable truths and yet, against the overwhelming evidences of biology, anatomy, physiology, psychology and psychiatry, against all common sense, do you not deliberately promulgate that impossible and utterly irrational doctrine of personal immortality? I charge that you do, and that by so doing you lead my client not only into false hopes but into a false view of his true relation to things, and cause him to commit grievous errors which he might otherwise avoid. You encourage him to escape into a world of dreams while suffering and discounting the world of reality. You encourage him to

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<sup>5</sup> 6,000,000,000,000,000,000 miles.

think of tomorrow when his thought should be on today. You tell him that he is going to be an angel-like being when he is not yet a reasonably intelligent or well-educated animal. I petition this court to put an end to the promulgation of these dangerous and unproved conceits.

The history of human error reveals that at the intellectual level the most precious value of all values is doubt. By doubting, by asking questions of his cosmos and by actively exploring it, man has come into his far-reaching understanding of it, into his power to control atoms and molecules, power to discipline his body and his thought, power to control pestilence and disease, to relieve suffering and to prolong life, to build for himself a good home and a good society.

If doubt is high on my list of values, with you it is frequently condemned as a dangerous and injurious thing. Again and again you have condemned my client for challenging accepted belief, and backed up your condemnation with punishments appropriate to heresy. Hersey is evil only because it stands in contradiction to irrefragable truth. If one accepts the allegedly incontrovertible nature of your metaphysical propositions—such as, for example, your interpretation of the problem of good and evil—then you were right through all the centuries when you threw heretics into dungeon or the fire. You could not consistently have done otherwise. The problem of good and evil, if formulated in Christian terms, can only be solved in the manner by which the Christian church has historically solved it—by the condemnation and extermination of heretics. But I repeat that not a single one of your propositions has any evidence in support of it, and consequently I demand as his natural right that my client be given his intellectual freedom and permitted to doubt where and when he will.

You assert that you are against all anthropomorphic conceptions of God, and then you immediately impute to him that particular molecular vibration of the hypothalamus and associated titillation of the sensorium called love, and another called anger. Worse, you fabricate out of the hypothalamic reactions a web of righteousness in which my client is helplessly trapped while he waits fear-somely for the divine vengeance to strike and destroy him.

When you speak of God you are not using an expression of mere philosophical convenience. You mean an interest prejudiced with respect to man's fate, a will implemented by the power to influence that fate, a conscience shot through and through with moral values. You mean that birth and death and suffering exist by his specific permission. Does Apollo still drive the chariot of the sun? Does Aeolus still stir up the wind or Neptune agitate the sea? Does Jove still hurl the thunderbolt against his enemies? Need I tell

you that birth is a somewhat preposterous biological affair of copulation, fecundation and maturation; that death is physical-chemical disintegration; that life is not preternaturally precious, but naturally so cheap that it spawns itself over the face of the earth until half the creatures upon it are parasitic, until man himself can only live as a saprophyte upon the remains of other living things, until shortly there will not be sunlight and soil enough to support all the members of the human race? Need I repeat that every organism on the face of the earth is fighting every other organism to hang onto life — life fighting against life for its short and inconsequential span? You well know that your God, who says of himself, '*Ego Dominus*!', cannot kill a butterfly until the time comes for it to die a natural death.

On the first and basic problem of existence, the problem of good and evil, you abandon reason and turn to revelation for an answer. This is an intellectual default that for you is catastrophic because it brings your whole supernatural thesis crumbling down in ruins. It is one thing to say, "Yes, Virginia, there is a Santa Claus" and quite another to say, "Yes, Virginia, there is a God." Virginia will certainly ask, "Is God good?" If you answer yes, you are going to have a difficult time explaining away her toothache. I prefer to answer, "Virginia, I do not know anything about God," and to explain her toothache in terms of vitamins and corruptible dental enamel.

You cannot tell Virginia whether your God is good or not. Indeed, I charge that when you talk about God you are talking about something about which you know absolutely nothing. The revelation and inspiration which you have hitherto presented as evidence lack even speciosity, and your personal intuition is no more reliable. If you were tossing pennies, you would not rely on your intuition; you would be guided by that tested theory of probability, the essence of which is that it utterly excludes all supernatural interference. You would not trust your intuition in finding your way around Chicago. And yet you ask my client to credit your intuition or the intuition of others in matters where it can be put to no test whatsoever for verification, and in such important matters as life and death! I plead with this court that you be enjoined from passing off these wishful thinkings, warped by a primitive morality of retribution and atonement, as valid philosophical currency.

"The universe is not to be narrowed down to the limits of the understanding . . . but the understanding must be stretched and enlarged to take in the image of the universe as it is discovered.' Only thus, without preconceptions, without unwarranted speculations, without false visions of himself, can man grow into and en-



large his natural right. We need not look to far horizons to see the danger — it is with us here. We are agreed on telephones and airplanes and automobiles, on vitamins and fertilizers and the rotation of crops, on electrons and galaxies and cosmic rays, on everything which pertains to how to live, but on the basic question of *why* we live some of us are almost twenty centuries apart. The subject is too delicate to discuss in public, and so our textbooks are skeletons of dead philosophies, our so-called liberal education is a myth. The fabric of the law is shot through with the unsound fibers of your metaphysics, the pattern of government is distorted with its misconceived idealisms, every generation of children is perplexed to find some way out of the intellectual dichotomy which is forced upon them when they are weaned. We are a people confused and frequently paralyzed by irresolution, not so much as how to live as why to live. So pervasive are the stresses engendered by the irreconcilable contradictions of biology and metaphysical presupposition that George Brock Chisholm,<sup>6</sup> the psychiatrist, addressing his professional colleagues, has charged that you are in considerable measure responsible for the recurrent surge of war that devastates the world every twenty years or so. "For a cause (of war)", he says, "we must seek some consistent thread running through the weave of all civilizations we have known and preventing the development of all or almost all the people to a state of true maturity. What basic psychological distortion can be found in every civilization of which we know anything? It must be a force which discourages the ability to see and acknowledge patent facts, which prevents the rational use of intelligence, which teaches or encourages the ability to dissociate and to believe contrary to and in spite of clear evidence, which produces inferiority, guilt and fear, which makes controlling other people's personal behaviour emotionally necessary, which encourages prejudice and the inability to see, understand and sympathize with other people's points of view. Is there any force so potent and so pervasive that it can do all these things in all civilizations? There is — just one. The only lowest common denominator of all civilizations and the only psychological force capable of producing these perversions is morality, the concept of right and wrong. . . .

"We have been very slow to rediscover this truth and to recognize the unnecessary and artificially imposed inferiority, guilt and fear, commonly known as sin, under which we have almost all labored and which produces so much of the social maladjustment and unhappiness in the world. For many generations we have bowed our necks to the yoke of the conviction of sin. We have swallow-

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<sup>6</sup> Chisholm, *The Reestablishment of Peacetime Society*, 9 PSYCHIATRY 3 (1946).

ed all manner of poisonous certainties fed us by our parents, our Sunday and day school teachers, our politicians, our priests, our newspapers and others with a vested interest in controlling us. 'Thou shalt become as gods, knowing good and evil,' good and evil with which to keep children under control, with which to prevent free thinking, with which to impose local and familial and national loyalties and with which to blind children to their glorious intellectual heritage. Misguided by authoritarian dogma, bound by exclusive faith, stunted by inculcated loyalty, torn by frantic heresy, bedevilled by insistent schism, drugged by ecstatic experience, confused by conflicting certainty, bewildered by invented mystery, and loaded down by the weight of guilt and fear engendered by its own original premises, the unfortunate human race, deprived by these incubi of its only defences and its only reasons for striving, its reasoning power and its natural capacity to enjoy the satisfaction of its natural urges, struggles along under its ghastly self-imposed burden. The results, the inevitable results, are frustration, inferiority, neurosis and inability to enjoy living, to reason clearly or to make a world fit to live in. . . ."

It has been said that if metaphysical encouragement were withdrawn from him, man's life, like Henny Penny's heaven, would come tumbling down; that without a doctrine of personal immortality he would have no reason to live at all. I do not believe it. I contend on the contrary that, for the majority of people in all walks of life, that doctrine is so impossible to reconcile with common sense that they pay only a nominal obeisance to it.

I have not observed that biologists, psychologists, psychiatrists, chemists, engineers, lawyers, physicians, bankers, writers, poets, musicians, artists, philosophers, and citizenry in general have succumbed to suicidal gloom in the face of the proposition that their prejudices and infirmities are not to be perpetuated throughout infinite time.

Some argue that without supernatural sanctions society would crumble into chaos, beyond the power of the police force to hold it together. I do not believe that, either. There are more than fifty-seven varieties of supernatural sanctions in the world at large, and comparative morality reveals that the greater the intellectual content of a culture, the less significant the supernatural sanction. Some argue that we must continue to call the unknown by a name, just for the sake of a name as a handle. Nor do I believe that. A handle does not make a pot. Man wants the right answer or no answer — not a speculation falsely labeled truth.

The Reverend John Murray has said to me that my "scientific monism is . . . a false creed, vacuous, socially destructive and —

what is perhaps worse — wholly unnecessary.”<sup>7</sup> I reply that my creed is not vacuous but contains the whole of the cosmos, it contains all man’s body and mind and all his hopes and despairs; it contains the supernaturalist’s speculations, as well as my steadfast refusal to accept those speculations as established fact. I repeat that it is the closest approach to truth which man has found. If it is a false creed then all is deception: atoms and molecules are not real, Hiroshima and Nagasaki were but fancied episodes, and you and I are not flesh and blood, but only imagined things. I reply that my creed is not socially destructive. It is the firm foundation upon which man has built his life, his world, the firm foundation upon which he can further realize his dreams. It may be unnecessary, but in the face of the overwhelming evidence I cannot, in face of the dire consequences I dare not, indulge anyone in a supernaturalism which is but a relic of error dating back to man’s jungle days.

Let us search for our values not beyond the stars but in the stuff of life itself, in the very dynamics of living. I grant you that man is a fumbling and slow-witted creature, acquisitive, jealous, quick to make mistakes, and easily stirred to anger. In some respects he is his own worst enemy. But he is forced to struggle for existence not only with the rest of nature but with his fellowmen who are pretty much like him. He might have survived, as indeed he did for many centuries, in a self-centered matriarchial or patriarchial clan, but as he increased his numbers and competition became severe he was forced to consider not only his personal interests but those of his neighbors. And he found that in a social life he gained more than he lost.

The Utopia of an ideal political union is, I conceive, impossible to achieve, but when Jefferson said that all government is a necessary evil he had possibly just returned from a long ride over bumpy Virginia roads. All government must in the nature of things be a mixture of good and evil. If every man would maximize his satisfactions, every man must in some degree come into conflict with other men, and the only alternative to combat and survival of the strongest is compromise. “What is government itself, but the greatest of all reflections on human nature?”, Madison asked. Government is the framework which protects and fosters all human freedom; only within it can man realize his natural rights, however conceived; and within it any philosophy of human values must undergo its acid test. So pertinent is Madison’s rhetorical question that I will rest my defense of the naturalistic basis of values on a single case, the Federal Convention which met in

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<sup>7</sup> Murray, *Religion and Modern Science. Three Interpretations*, 28 YALE SCIENTIFIC MAGAZINE, No. 5, February (1949).

Philadelphia in 1787 to frame a new government for the Thirteen States.

In the War for Independence, a loose confederation had been formed between the thirteen colonies, but the articles of this 'Confederation and Perpetual Union', hastily drafted in the midst of battle fifteen years before, had proved inadequate. The Confederation was no more than a league of political units in which the prerogatives of individual states remained the source of dissention and inefficient government, and the basis of last appeal. It lacked a central executive to administer it and a central judiciary to guide it. States of contrary opinion could and did pass contradictory laws and go their own way to the injury of others. The Continental Congress represented government not by the people but by political units of differing economic, social, and religious interests. In it, each state had one vote regardless of population, and the Congress itself had so little power that only by begging money had it been able to finance the war. The colonists had too hastily experimented with government and the experiment had not worked very well.

The War for Independence was over, but as Benjamin Rush said, the revolution—to establish and perfect a new form of government—had only begun. For the first time in history the men who came to the federal convention—'the collective wisdom of the continent,' in the rhetoric of the day—had the opportunity to create, almost *de novo*, the kind of government they wanted.

The War had been fought to free the colonists from oppressions which they believed, with good justification, to stem from the monarchical form of government wherein men's liberties could be curtailed without their consent. As stated in the Declaration of Independence, they had come to conceive that the people, the governed, should comprise the government. Beyond this there was scarcely a single principle to which all agreed.

It was conceived that the proper functions of a federal government were to secure the country against foreign invasion, to prevent dissensions among the states, to promote the general benefit through the regulation of interstate trade and the promotion of interstate interests such as navigation, agriculture, and other national works, to defend itself against the encroachments or resistance of refractory states, and to supply a national government superior in law and effect to the state legislatures. But every one of these functions must operate at some time and in some measure against the individual and his natural rights, and so, too, a federal government, however visualized, must operate against the prerogatives of the political units represented by the thirteen participating states.

These basic oppositions emerged in Philadelphia in multitudinous issues: Was a federal government really necessary? Should state government be abolished? Should a state be charged with guilt, and punishment inflicted on all its members, innocent and guilty alike? What would be the prerogatives of the state governments which, assuming their continuation, must be subordinated to a federal judiciary and executive body? How was the federal judiciary to be selected—by election by the people or by the state legislatures? How was the federal executive to be selected? And was this supreme office to consist of one, two, or three men? Was it to be filled for the term of three years, or the luckier number seven? Despite the assertion of the Declaration of Independence, that all men are created equal, all men's votes were not equally informed, nor should they count equally in the federal scheme when some men contributed more than others to federal maintenance. And should the slaves vote? If not, should they be counted as wealth, population, or neither?

Through the hot summer months of 1787 the Federal Convention wrestled with these knotty problems. That the final document, returned to the Federal Congress in September, was an imperfect political instrument its authors well knew. Not a man who signed it but wished it could be different in one detail or another. It contained no Bill of Rights. It had been formed without the knowledge of the people. It threatened the rights of private property. It put the dangerous power of the veto into the hands of a single chief executive, called the President in the hope that the name itself would deter him from trying to make himself into a king. It established a Supreme court above all recourse and injury. It compromised on the states rights issue. It compromised between the northern and southern states by counting slaves as wealth, and it compromised again by consenting to the continuance of the slave trade for twenty years.

Its authors hesitated to believe that, in their wisdom or lack of it, they could forge a system of government, whatever its checks and controls, whatever its provisions for amendment, which would serve a country so great that some of the members of Congress would have to travel 600 miles in order to reach whatever would be the seat of the national capitol, which, because of state jealousies, they hesitated to place in any existing state. But they signed (all except Rhode Island who held out stubbornly on the right to issue paper money) the imperfect document that embodied much of the preconception, prejudice and inexperience of the time, but which also embodied the wisdom of Washington, Randolph, Franklin, Madison, Wilson, Hamilton, Mason, Patterson, and others, as applied to the political dynamics of bringing

the natural rights of man into balance with the oppositions and strains engendered by the necessities of living together. They signed a document, the basic principle of which reflected the opinion of John Adams, that 'the natural rights of man exist in the frame of human nature, are rooted in the constitution of the individual and moral world,' a document that moved to put into effect the then not so 'self-evident' truth voiced by Jefferson, that all men are endowed with the inalienable rights to life, liberty and the pursuit of happiness.

Perhaps I need not have labored you with so much history in order to make the point that government, the most important of all social values, is an empiric application of the basic biological dynamic underlying all values, namely the maximization of individual human satisfactions.

Let me emphasize the word *individual*. I am not speaking about societies, states or superstates. Any attempt to identify by analogy any human society, any state or any superstate as a biological organism, or to imply that it possesses natural rights of its own, is a gross biological error.<sup>8</sup> The state is only an aggregate of individuals who are prepared to compromise their individual natural rights to a greater or lesser degree in the interests of collective effort. The point is important at the present moment when there is abroad the view that there is intrinsic in a communal group some value which does not derive from the natural rights of the individuals concerned.

You will recall that God was not mentioned once in the new Constitution. The omission was deliberate, and for good reasons. The authors, some of them religious, some irreligious men, could all look back upon strife and persecution engendered by religion and they saw no reason for including any reference to God in so important a civil document. They explicitly prohibited the Federal Government from fostering religion in any form; perhaps this was pacifism of a sort, but how tragic it would have been if a majority of the thirteen states, however counted, had carried the day on our national religious doctrine.

God was mentioned only once in the Federal Convention Hall. At a crisis in the debate over states rights, when it seemed for the tenth time that the Philadelphia efforts would go in vain, my colleague in science, Franklin, speaking from the conviction, for which he said he had evidence (evidence, incidentally, which he did not present to the Convention), that God governs in the af-

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<sup>8</sup> For a further expression of this view see SIMPSON, *THE MEANING OF EVOLUTION* (Terry Lectures) Yale University Press, New Haven (1949). For a contrary view see GERARD, *A BIOLOGIST'S VIEW OF SOCIETY*, University of Chicago Press (in press), and WINGATE, *The Rights of Man, A Biological Approach HUMAN RIGHTS*, UNESCO, New York (1949).

fairs of men, moved that each meeting of the Convention be opened by prayer. Sherman seconded the motion. Hamilton and others expressed a variety of opinions. To begin prayers now might cause talk and lead the public to suspect that there was trouble behind closed doors. It was not the Quaker custom to have prayers at political meetings, and this was Philadelphia. Among the delegates were not only Quakers but Episcopalians, Presbyterians, Methodists, Baptists, Roman Catholics and Deists. It was pointed out that the Convention had no money to pay a chaplain, anyway. The motion was never put by chairman General Washington, and the meeting adjourned without action.

Gentlemen, I promised to present evidence that my client, when freed from transcendental metaphysics, can stand on his own feet. As such evidence, I submit the Constitution of the United States.

I am not a student of government, I have only a vague idea that sometimes the Constitution works well and sometimes it does not. I am not in a position to criticise it or recommend any amendment, but it is clear even to a biologist that all is not sweetness and light. In the rhetoric of the day, one may view with alarm the circumstance that government has failed to elicit from the electorate the 'collective wisdom of the continent'; more frequently than not the poll is a statistical resultant of intentionally or ignorantly deceptive oratory, preconception, prejudice and concealment, of ambition and avarice. One may view with alarm the development of the Federal Government in the direction of a paternalism that discourages industry, thrift and economic independence; with so much emphasis upon what society owes to every man under the Bill of Rights, there is little consideration of what every man owes to society under what the biologist, Conklin,<sup>9</sup> has called the unwritten Bill of Duties. One may view with alarm the danger of a 'World Recovery Program' whereby the economic resources of this and other countries will be drained and the standard of living substantially lowered in order to maintain viable the dense populations of the poverty-stricken countries of the earth; the general good of all mankind is not an ultimate, absolute value, for 'all mankind' is but an aggregate which has as such no natural rights that do not issue from the rights of the individuals concerned, both those who are to be benefited and those who are to be compromised. One may view with alarm our failure to arrive at that world Utopia visualized by Franklin, a land where a philosopher would be at home in any part; even as the Federal Convention was divided by political states rights, we remain today divided by metaphysical states rights.

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<sup>9</sup> CONKLIN, MAN: REAL AND IDEAL, Chas. Scribner's Sons, New York (1943).

These alarms are ameliorated, however, by a long view of history. Civilization extends back scarcely more than five or six thousand years; empiric science, except for a brief, abortive period in Greece, not much more than three hundred years; our Constitutional Republic only one hundred and sixty-three years; scarcely ninety years ago it was torn by civil war, thirty-three years ago by a war with Germany, nine years ago by a second war with that same country, each war a catastrophe reducing by a substantial measure the opportunity for the maximization of any human satisfactions even as it saved the opportunity as a whole. But it is not science that has failed. It is the adequate dissemination and application of science that is deficient to a point threatening our welfare. What is taught in our schools is too much the science of gadgets and not enough the science of man. Our textbooks are adroitly written to conceal and frequently to mislead, lest they offend one or another of a variety of religious beliefs, it being assumed that any and all religious beliefs, because they are religious, are necessarily right, whereas in fact we have no reason whatever to believe that any of them are right, and certainly most of them are wrong.

To repeat, I rest my case on the assertion that all values have a naturalistic basis which I find in the biological fact that every living organism operates to maximize its satisfactions. I claim that freedom to do this without unjust let or hindrance is the natural right of man, his by inheritance from two thousand million years of evolution. If I understand him correctly, one of the most distinguished Catholic philosophers in this country dismisses freedom itself (with what he calls its individualistic overtone) as merely an idea, a product not so much of metaphysic as of a myth or mood.<sup>10</sup> If I am correct, then the conflict between us is even more fulminant than I supposed, for this is a declaration that he and his church are enemies not only of democracy but also of biology. Freedom is not the product of any metaphysic or of any myth or mood; it is not even something which we once had in the Garden of Eden but lost in consequence of the affair of the apple; it is something that every organism has been fighting for ever since life first stirred in the primeval mud. The effort to attain it is the dynamic of life itself, and that effort will never cease so long as the pulse of life beats its dynamic rhythm.

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<sup>10</sup> Murray, *supra* note 7 at p. 63.